

## An Enclosure System for Scaffolding

### Field of the Invention

5        This invention relates in general to scaffolding systems and more particularly to an enclosure system that protects workmen from severe weather conditions, allows construction work to be done all year round and is easily installed to an existing scaffolding that is erected next to a building.

### Background of the Invention

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Construction work on various structures such as a building has been traditionally accomplished using a scaffold that is erected adjacent the wall of the building to provide access to the structure while it is under construction. Sheltering workers from inclement weather has usually been accomplished by  
15    attaching sheets of plastic or tarps that are attached to the frame of the scaffold by various means. Typically rope or wire is thread through the tarp and attached to the frame of the scaffold.

The disadvantage of this type of arrangement is that the tarp becomes  
20    difficult to handle especially at great heights. Furthermore once the tarp is attached to the frame of the scaffold, any significant wind can catch in the tarp and cause the tarp to act like as a sail and therefore create pressure on the footings of the scaffold.

25        Prior art scaffolding enclosures have been devised to address the noted problems. For example, United States Patent No. 5,408,770 issued on April 25, 1995 to Suzuki relates to a sheet stretcher which comprises a base, which has a hole for slidably receiving an expanded portion formed at an edge of a sheet, a slit communicating with the hole and through which the end  
30    portion of the sheet continuous to its expanded portion is insertable, a hole for slidably receiving a further expanded portion formed at an edge of a further

sheet, a slit communicating with the hole through which the end portion of the further sheet continuous to the further expanded portion is insertable.

Specifically, Patent '770 discloses a variety of sheet stretchers that  
5 may be assembled to connect a number of sheets to a scaffold frame. One type of stretcher connects sheets to sheets, while a second type of stretcher connects the sheet to an adjustment mechanism. Ropes or wires are used to attach the stretcher to the scaffolding frame.

10 Virtanen is the owner of U.S. Patent No. 3,995,715 which issued on December 7, 1976 relates to a scaffolding a plurality of sheets of plastic having bead portions, profiles surrounding the bead portions of each two abutting sheet edges thereby securing the sheets to each other. A plurality of attachment members partly surrounds the profiles and holds the profiles in  
15 related assembly with the scaffolding.

Jankowski is the owner of U.S. Patent No. 5,038,889 which issued on August 13, 1991 and relates to a scaffold enclosure having a plurality of panels. Each panel has a closure on a first lateral edge for securing that edge  
20 to an upright on the scaffolding. The closure can be straps having first and second flaps with hook and loop closures thereon for securing the straps to various sized uprights. Each panel also has fasteners, preferably continuous strips of hook and loop closures, on both its inner and outer surfaces at each edge. The panels are thus engageable on one another to form a scaffold  
25 enclosure with completely sealed seams. To facilitate installment, two types of panels, starter panels and continuing panels, are utilized, each having a particular arrangement of fasteners.

King is the owner of U.S. Patent No. 4,782,915 which issued on  
30 November 8, 1988 and relates to an apparatus for suspending cladding or protective sheeting from scaffolding includes a first member detachably securable to an element of scaffolding, and a second member capable of

attachment to said sheeting or cladding. The second member is adapted to hang from said first, thereby to hang the cladding or sheeting from scaffolding.

Nealeigh is the owner of U.S. Patent No. 5,778,999 which issued on  
5 July 14, 1998 and relates to a series of horizontally spaced tubular metal frames each include a pair of vertical short and long leg members rigidly connected by an inclined support member having a projecting upper end portion. The leg members are removably connected to the top ends of vertically aligned legs of a tubular metal scaffold assembly positioned  
10 adjacent a building. The inclined support members receive connector members connected to the building roof or ridge members connected by horizontal support members and supported by vertical posts resting on the roof or floor. A flexible light transmitting plastic film is supported by the inclined support members and ridge connector members to enclose the  
15 frames and scaffold assembly, and the film has an edge portion clamped to the roof or floor.

Furthermore there are other enclosure systems that focus on constructing a whole building. For instance the "We Cover Building Systems",  
20 Elmira, Ontario, Canada uses a polyoefin fabric for minimal heat transfer, and uses a flat sectional fabric fastening system that eliminated wrinkles, flapping, and chafing.

Although some of the prior art addresses some of the problems  
25 outlined above, they do not disclose an easy to install enclosure system that can be assembled with minimum labour, and can be used all year round and adapted to various weather conditions. Thus an enclosure system for scaffolding which may be easily attached to a scaffold frame, can be used with any height of structure, keeps inclement weather out, is easy to install is  
30 desirable.

### Summary of the Invention

An object of one aspect of the present invention is to provide an improved an enclosure system that protects workmen from severe weather conditions, allows construction work to be done all year round and is easily installed to an existing scaffolding that is erected next to a building.

In accordance with one aspect of the present invention there is provided an enclosure system for scaffolding frame that includes a plurality of stackable section members each having a first end and a second end and at least one slot. The stackable section members may be stacked one on top of each other so that the slot of each stackable section member is aligned with one another to form a continuous slot .

Conveniently, the stacking of the stackable section members one on top of each other defines a continuous profile. The continuous profile may further include a series of recesses at the first and second ends that can receive a connecting member so as to connect the stackable section members. Mounting members may secure each of the stackable section members to the scaffolding frame.

Preferably, an enclosing means is adapted to engage the slot and the continuous slot when the stackable section members are stacked one on top of each other to enclose the scaffolding frame.

Finally a method of erecting an enclosure system for scaffolding frame is also disclosed.

Advantages of the present invention are: easy to install to existing scaffold frames, provides a seal to keep inclement weather out of work area, adapted to accept a variety of tarps, such as reflective or insulated, made out of polyvinyl chloride (PVC) or aluminum, workspace can be heated via

connected members, tarp is elasticized, tarps can be linked together horizontally so that the enclosure system can be easily installed, quick connect attachment for securing enclosure system to structure, and can be adapted to fit around obstacles with a telescoping function.

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#### Brief Description of the Drawings

A detailed description of the preferred embodiment(s) is(are) provided herein below by way of example only and with reference to the following  
10 drawings, in which:

Figure 1 in a top plan view, illustrates the stackable section member and the mounting member mounted to a scaffolding frame in accordance with a preferred embodiment of the present invention;

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Figure 2 in a top plan view illustrates the stackable section member and the mounting member.

Figure 3a in a back perspective view, illustrates an alternative  
20 embodiment of the stackable section member of Figure 1.

Figure 3b in a top plan view, illustrates an alternative embodiment of the stackable section member and mounting member of Figure 1.

25 Figure 3c in a perspective view, illustrates the mounting member of Figure 1.

Figure 4a in a side perspective view, illustrates the stackable section member and the mounting member of Figure 3a.

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Figure 5 in a back perspective view, illustrates an alternative embodiment of the stackable section member of Figure 3a.

Figure 6a in a back perspective view, illustrates an alternative embodiment of the stackable section member of Figure 3a.

5        Figure 6b in a top plan view, illustrates an alternative embodiment of the stackable section member and mounting member of Figure 6a.

Figure 6c in a perspective view, illustrates the mounting member of Figure 6a.

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Figure 7 in a top plan view, illustrates the enclosure system in a telescoping position.

15        Figure 8 in a top plan view, illustrates the continuous profile mounted to the scaffold frame.

Figure 9 in a front elevational view, illustrates the connecting member.

20        Figure 10 in a perspective view, illustrates the enclosing means inserted into the stackable section members.

Figure 11 in a top plan view, illustrates the enclosure system mounted to the scaffold frame.

25        Figure 12a in a top plan view, illustrates the insulated enclosing means inserted into the stackable section members.

Figure 12b in a perspective view, illustrates the insulated enclosing means inserted into the stackable section members of Figure 12a.

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Figure 13a in a top plan view, illustrates the transparent enclosing means inserted into the stackable section members.

Figure 13b in a perspective view, illustrates the transparent enclosing means inserted into the stackable section members of Figure 13a.

5           Figure 14 in a side elevational view, illustrates the linking member.

Figure 15 in a front view, illustrates the linking of two adjacent adjustable tarps.

10           Figure 16 in a perspective view, illustrates the linking of two adjacent adjustable tarps.

Figure 17 in a top plan view, illustrates the linking of two adjacent adjustable tarps.

15           Figure 18 in a front elevational view, illustrates the assembled enclosure system.

20           Figure 19 in an end view, illustrates a variation of the mounting member.

Figure 20 in a bottom plan view, illustrates a variation of the mounting member in operation.

25           Figure 21 in a perspective view, illustrates a variation of the mounting member.

Figure 22 in an end view, illustrates a variation of the mounting member in operation.

30           Figure 23 in a perspective view, illustrates the bracket of the mounting member.

Figure 24 in an end view, illustrates a variation of the mounting member in operation.

5 In the drawings, preferred embodiments of the invention are illustrated by way of example. It is to be expressly understood that the description and drawings are only for the purpose of illustration and as an aid to understanding, and are not intended as a definition of the limits of the invention.

#### 10 Detailed Description of the Preferred Embodiment

Referring to Figures 1 and 2, there is illustrated in top plan views, an enclosure system 10 for scaffolding frame 12 in accordance with a preferred  
15 embodiment of the present invention. Referring to Figures 3-6 the enclosure system 10 for scaffolding frame 12 includes a plurality of stackable section members 14 each having a first end 16 and a second end 18, and at least one slot 20. The stackable section members 14 may be stacked one on top of each other so that the slot 20 of each stackable section member 14 is aligned  
20 with one another to form a continuous slot 22.

Referring to Figures 1, 2, 8 and 9 the stacking of the stackable section members 14 one on top of each other defines a continuous profile 28 with a top side 30, a bottom side 32, two sides 34 and 36, as well as a central pocket  
25 52 running the length of the continuous profile 28. Each side 34 and 36 has one of the slots 20. The slot 20 may be further defined as a C-shaped channel 38, which runs along each of the sides 34 and 36. The C-shaped channels 38 engages or retains an enclosing means 26.

30 Referring to Figure 7 the bottom side 32 may further include a telescoping portion 78 that can adjust the distance between the stackable section members 14 and the scaffold frame 12. The ability to telescope the



stackable section member 14 or the continuous profile 28 (once the stackable section members 14 are stacked) allows the installation to the enclosure system to go around any obstacles. The stackable section members 14 may be made from a variety of materials such as PVC and aluminum thereby allowing the enclosure system 10 to be mounted around corners and easily attached to structures at various angles.

The continuous profile 28 may further include a series of recesses 40 at the first and second ends (16 and 18 respectively) that can receive a connecting member 42. Each recess 40 may have an edge 50. The connecting member 42 allows for the connecting of either the first end 16 or the second end 18 of the stackable section members 14 to one another. Specifically the connecting member 42 may be a pin 44 having a raised center portion 46. Either end 48 and 49 of the pin 44 may be inserted into a recess 40 located on either the second end 18 of a first stackable section member 14. The recess 40 may receive the end 48 of the pin 44 until the raised center portion 46 of the pin 44 contacts the edge 50 of the recess 40. Therefore the other end 49 of the pin 44 is exposed, which allows a second stackable section member 14 to be aligned and stacked on top of the first stackable member 14, by inserting the other end 48 of the pin 44 into the recess 40 at the first end 16 of the second stackable section member 14. Subsequent stackable section members 14 can be likewise added so as to create the continuous profile 28.

Mounting members 24 may secure each of the stackable section members 14 to the scaffolding frame 12. The mounting members 24 can be mounted at various points along the scaffold frame 12 depending on the desire of the installer. The mounting member 24 may be better defined as a bracket 52 that is adapted or shaped to receive the scaffolding frame 12. Figures 19 and 20 illustrate alternatives to the mounting member 24. More specifically Figures 19- 22 illustrate a hinged bracket 110 adapted to receive a thumb screw 112 that locks the hinged bracket 110 on the scaffolding frame

12. The hinged bracket 110 may have hooked ends 120 that can hook or latch onto the stackable section member 14. Figures 23-24 illustrate two brackets 114 having each having a threaded recess 116 at one end 122 that receives a fastening means 118 for securing the brackets 114 to the scaffolding frame 12. Each bracket 114 may have a hooked end 124 that can latch on to the stackable section member 14.

Referring to Figure 3c and 6c the bracket 52 may also be notched 58 to easily receive a fastening means 54 for securing the bracket 52 to the stackable section members 14. The fastening means 54 may be a bolt and screw arrangement 56 by way of example though other fastening combinations are possible.

Referring to Figures 10 and 11, an enclosing means 26 is adapted to engage the slot 20 and the continuous slot 22 when the stackable section members 14 are stacked one on top of each other to enclose the scaffolding frame 12. The enclosing means 26 may be an adjustable tarp 60 having two side edges 62 and 64 respectively. The side edges 62 and 64 of the adjustable tarp 60 are adapted to engage each of the C-shaped channels 38. The side edges 62 and 64 of the adjustable tarp 60 may further include a guide member 66 attached to each of the side edges 62 and 64. The guide member 66 may be inserted into each of the C-shaped channels 38 on each of the sides 34 and 36 of the continuous profile 28. The guide member 66 and the side edges 62 and 64 of the adjustable tarp 60 are then pulled along the C-shaped channels 38 and therefore along the continuous profile 28. The guide member may be rope or wire 68 that is positioned at the side edges 62 and 64 of the adjustable tarp 60. The side edges 62 and 64 are wrapped around the rope or wire 68 and the side edges 62 and 64 are then heat-sealed to secure the rope or wire 68 to the side edges 62 and 64 of the adjustable tarp 60.

Referring to Figures 12 and 13 the adjustable tarp 60 may have elastised portions 70 towards the side edges 62 and 64 to allow the adjustable tarp 60 to flex and contract when it is installed and in operation. The adjustable tarp 60 may be made from insulated material, reflective material, transparent material or camouflage material by way of example.

Referring to Figures 14, 15, 16 and 17 the adjustable tarp 60 may further be defined as having a top edge 72 and a bottom edge 74. The top edge 72 and the bottom edge 74 each may have a linking member 76 so that the linking member 76 on the top edge 72 of the adjustable tarp 60 can connect to a linking member 76 on the bottom edge 74 of an adjacent adjustable tarp 60. The linking member 76 may be clasp mechanism 90 that links to adjacent adjustable tarps 60 together thereby ensuring that there is very little open space between the adjustable tarps 60 that could allow air in. Furthermore attachment loops 100 may also be located on the clasp mechanism 90 to tie down the sides 62 and 64 of the adjustable tarps 60 to provide further stability.

This arrangement in combination with elastised portions 70 and the configuration of the enclosing means in relation to the stackable section members 14 results in an efficient seal for the enclosure system 10. As a result there is less chance of the wind catching the tarp and causing it to form a sail and therefore destabilize the scaffolding frame 12. Furthermore the enclosure system 10 may be erected all year round since appropriate type of tarp material can be used depending the weather requirement, which results in year use of the enclosure system 10 and therefore year round construction. For example the insulated tarp may be used in winter to retain the heat between the building and the enclosure system 10. Furthermore the central pocket 52 that may run the length of the continuous profile 28 may act as a passage way for heat that is blown up from the base of the scaffolding frame 12 or a heated element may be threaded down the passageway by way of example.

Referring to Figure 18, a method of erecting an enclosure system 10 for scaffolding frame 12 is also disclosed. The erecting of the enclosure system 10 includes the following steps: stacking the stackable section members 14 one on top of each other to form the first continuous profile 28 and so that each slot 20 on either side 34 and 36 of each stackable section member 14 is aligned when the first continuous profile 82 is mounted to the scaffolding frame 12 thereby forming the continuous slot 22 on each of the two sides 34 and 36; securing the first continuous profile 28 to a first vertical member 80 of the scaffolding frame 12 by the mounting members 24; stacking the stackable section members 14 one on top of each other to form the second continuous profile (not shown) and so that each slot 20 on either side 34 and 36 of each stackable section member 14 is aligned when the first continuous profile 28 is mounted to the scaffolding frame 12 thereby forming the continuous slot 22 on each of the two sides 34 and 36; securing a second continuous profile to a second vertical member (not shown) of the scaffolding frame 12 by the mounting members 24; inserting the enclosing means 26 into the continuous slot 22 of the first continuous profile 82; inserting the enclosing means 26 into the continuous slot 22 of the second continuous profile; pulling the enclosing means 26 along the continuous slots 22 to a desired distance along the first and second continuous profiles to enclose the scaffolding frame 12.

The method can be further defined as including the step of inserting a an end 48 of the connecting member 42 into a recess 40 of a second end 18 of a stackable section member 14 and inserting the other end 49 into a recess 40 of a second stackable section member 14. By repeating the process over and over the continuous profile 28 may be erected. The method can also include the step of connecting the linking member 76 on the top edge 72 of the enclosing means 26 to a linking member 76 on a bottom edge 74 of an adjacent enclosing means 26.

The insertion of the enclosing means 26 or adjustable tarp 60 into the C-shaped channels 38 can be accomplished a number of different ways. A series of adjustable tarps 60 that are pre-linked may be located on a nearby rack to allow easy access by the installer, so that upon installation, the first adjustable tarp 60 inserted into the C-shaped channels 38 and the remaining adjustable tarps 60 subsequently roll off the rack as the enclosure system is erected 10. The guide member 66 or rope 68 on each side 62 and 64 of the enclosing means 26 may also be attached to a mechanical winch or similar device to help pull the adjustable tarp 60 up the structure.

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Other variations and modifications of the invention are possible. All such modifications or variations are believed to be within the sphere and scope of the invention as defined by the claims appended hereto.